REMARKS

Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks.

Regarding the objection to Applicant's use of the designation "Related Art" in Fig. 1, Applicant notes that the specification refers to "known" art which may not be "prior" art. As such, Applicant has chosen to identify Fig. 1 as Related Art to indicate that his invention is not drawn to the structure illustrated therein. Applicant's Fig. 1 fully complies with the requirements for submission of drawings.

The specification has been amended to include section headings, as requested in the Office Action. No new matter is believed to be introduced by the amendments to the specification.

Regarding the objection to the claims, Applicant traverses and notes that the claims fully comply with the practice set forth in MPEP §608.01(m). And more specifically, each of the claims is drafted as the object of a sentence beginning with: "I (or we) claim."

Claim 8 has been amended for clarity. The amendment is considered non-narrowing, and no estoppel should be to deemed attach thereto.

Claims 8, 2-4, and 7 were rejected, under 35 USC §103(a), as being unpatentable over Yamamoto (GB 2,031,247) in view of Ueda

et al. (US 5,751,828) and further in view of Saik et al. (US 4,312,118). Claim 5 was rejected, under 35 USC §103(a), as being unpatentable over Yamamoto in view of Ssutu (US 6,535,613). Applicant respectfully traverses.

The Office Action acknowledges that Yamamoto does not disclose a disk-shaped magnet as recited in independent claim 8 (see Office Action page 5, lines 2-3). To overcome this deficiency, the Office Action cites Saik for teaching a disk-shaped magnet (page 5, lines 3-5).

It is well-settled that, to establish a *prima facie* case of obviousness, there must be some suggestion or motivation to modify the reference or combine reference teachings (see MPEP §2143, first sentence). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination (MPEP §2143.01, first sentence of third bolded heading).

Such suggestion, motivation, and desirability are lacking in the present Office Action. Therefore, a *prima facie* case of unpatentability has not been established and allowance of claim 8 and all claims dependent therefrom is warranted.

More particularly, the Office Action does not identify any motivation for modifying Yamamoto's device to include the magnet suggested by Saik. Instead, the Office Action proposes that disk-shaped magnets are commonly used in magnetic circuits, such as those disclosed by Saik, and, therefore, it would have been obvious to a skilled artisan to use a magnet in the form of a disk (page 5, lines 3-9). The Applicant submits that, regardless of whether disk-shaped magnets may be commonly used in magnetic circuits, such use, alone, would not imbue a skilled artisan with the motivation to modify Yamamoto's device to include a disk-shaped magnet.

Moreover, Yamamoto does not teach or suggest the claimed feature of a dish-shaped yoke that is symmetric in rotation about an axis and Saik does not teach or suggest the claimed feature of a disk-shaped magnet, as proposed in the Office Action (see Office Action page 5, lines 5-7). As may be determined by inspection of Yamamoto's Figs. 1 and 2, the illustrated yoke 1 is somewhat rectangular or urn-shaped, as opposed to dish-shaped and symmetric in rotation about an axis. As may also be determined by inspection, Saik discloses in Fig. 1 an annular-shaped magnet, rather than a disk-shaped magnet. Since the applied references do not disclose or suggest all of the claimed features, allowance of claim 8 and all claims dependent therefrom is warranted for

this independent reason. These claimed features provide significant benefits, as discussed in detail below, that are not achieved by modifying Yamamoto's device to include Saik's annular-shaped magnet, as proposed in the Office Action.

Furthermore, under MPEP §2143.01, if the proposed modification would render the structure being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification (MPEP §2143.01, first sentence of fifth bolded heading). The proposed modification of Yamamoto's magnetic speaker does in fact render it unsatisfactory for the intended purpose of Yamamoto's invention.

More particularly, Yamamoto discloses that with respect to ferrite type magnets, permeance in the magnetic circuit is more affected by the size of the sectional area of the magnet in contact with the magnetic circuit than the thickness of the magnet itself (Yamamoto page 1, lines 77-81). The greater the sectional area, the easier it is to keep permeance low, thereby increasing the efficiency of the magnetic circuit (page 1, lines 81-82 and 70-76). Therefore, when the size of the magnetic circuit is the same, using a permanent magnet with a square plan rather than one with a circular plan is preferable as the permeance can be kept lower, and the magnetic circuit of the yoke

and pole can be miniaturized to decrease manufacturing costs (page 1, lines 82-88).

As indicated above, Yamamoto expressly states that using a magnet with a square plan is preferable to using one with a circular plan because the former plan increases the efficiency of the magnetic circuit. By increasing the magnetic circuit's efficiency, the square magnet promotes the miniaturization of the circuit and decreases its manufacturing cost. Introducing Saik's annular-shaped magnet, having a circular plan, into Yamamoto's magnetic circuit, as proposed in the Office Action, would impede the achievement of Yamamoto's desired benefits of increased efficiency, miniaturization, and reduced manufacturing cost.

The decreased efficiency is even more pronounced in the proposed structure, than it might otherwise be, due the large central hole in Saik's annular magnet. In the structure proposed in the Office Action, this large void in the magnet would decrease the sectional area of the magnet that is in contact with the magnetic circuit and, thereby, greatly diminish the magnetic circuit's efficiency. As a result, the proposed modification renders Yamamoto's magnetic circuit unsatisfactory for the intended purpose expressed by Yamamoto. Therefore, allowance of claim 8 and all claims dependent therefrom is warranted for this additional independent reason.

To promote a better understanding of the differences between the present invention and the applied references, Applicant submits the following additional remarks.

Two types of magnetic circuits for an electrodynamic loudspeaker exist. The first type, generally referred to as an "external magnet type loudspeaker magnetic circuit," comprises an annular permanent magnet encircling a yoke. Saik shows an example of an "external magnet type magnetic circuit" wherein a permanent annular magnet 20 of ferrite encircles a core 16.

The second known type is referred to as an "internal magnet type loudspeaker magnetic circuit." In this second type, the permanent magnet is contained in the yoke. Yamamoto shows an example thereof (see page 1, left column, lines 5 and 6) wherein a permanent parallelepipedic magnet 2 of ferrite is contained in yoke 1.

An internal magnet type magnetic circuit presents numerous advantages in comparison to an external magnet type magnetic circuit. Yamamoto cites one of them concerning "the leakage flux rate" (see page 1, left column, line 7-16).

However, the most important point is that such internal magnet type magnetic circuits are particularly advantageous with regard to the magnetic energy to be supplied by the magnet, because the magnet may be massive, without holes. Such internal

magnet type magnetic circuits are more powerful - or may be, for equal power, of smaller size - than external magnet type magnetic circuits.

To make this point clearer, Applicant encloses as Exhibit I a marked-up copy of Saik's Fig. 2. As indicated in Exhibit I, Saik's annular magnet 20 has an external diameter Rext, an internal diameter Rint, and a height h. Therefore, the volume Van of the magnetic material constituting annular magnet 20 is given by the expression:

$$Van = \pi.h.(Rext^2 - Rint^2) = \pi.h.Rext^2(1-Rint^2/Rext^2).$$

Supposing that Rext = 27 mm and Rint = 16 mm, so that Rint/Rext = 0.6 and $Rint^2/Rext^2 = 0.36$, then in the represented example of Saik:

$$Van = \pi.h.Rext^2(1-0.36) \text{ and}$$

$$Van = 0.64.\pi.h.Rext^2.$$

Now, if we consider a disk-shaped magnet (without any central hole) having an external diameter equal to Rext and a height equal to h, the volume Vd of the magnetic material thereof is given by the expression: $Vd = \pi.h.Rext^2$.

Consequently, Saik's annular permanent magnet 20 has only 64% of the magnetic material constituting the corresponding disk-shaped magnet having the same external diameter and the same

height. This annular permanent magnet 20 is therefore 64% less powerful than the corresponding disk-shaped magnet.

One of ordinary skill in the art at the time the invention was made would have known that a big central hole in a permanent magnet results in an important loss of power for the magnet. And this is one of the reasons for the creation of the "internal magnet type loud-speaker magnetic circuit," which permits the use of a more powerful permanent magnet.

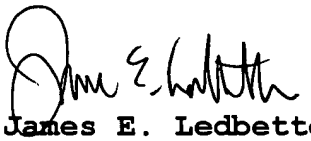
Technically speaking, the replacement of the massive permanent magnet of an "internal magnet type loudspeaker magnetic circuit" by the centrally opened permanent magnet of an "external magnet type loudspeaker magnetic circuit" offers no apparent benefits. Therefore, the replacement of the massive permanent parallelepipedic magnet 2 of Yamamoto by the annular permanent magnet 20 of Saik is technical heresy.

In the embodiment of the present invention shown in Fig. 4 (claim 5), magnet 8.3 is provided with a central hole 18. However, this hole has a limited diameter and the section of magnet 8.3 is large enough to compensate for the loss of magnetic material resulting from this small hole. Thus, this small hole is not similar to the large central hole of the permanent magnet of an "external magnet type loudspeaker magnetic circuit."

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,



Date: December 10, 2004
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EXHIBIT I

U.S. Patent Jan. 26, 1982 Sheet 2 of 4 4,312,118

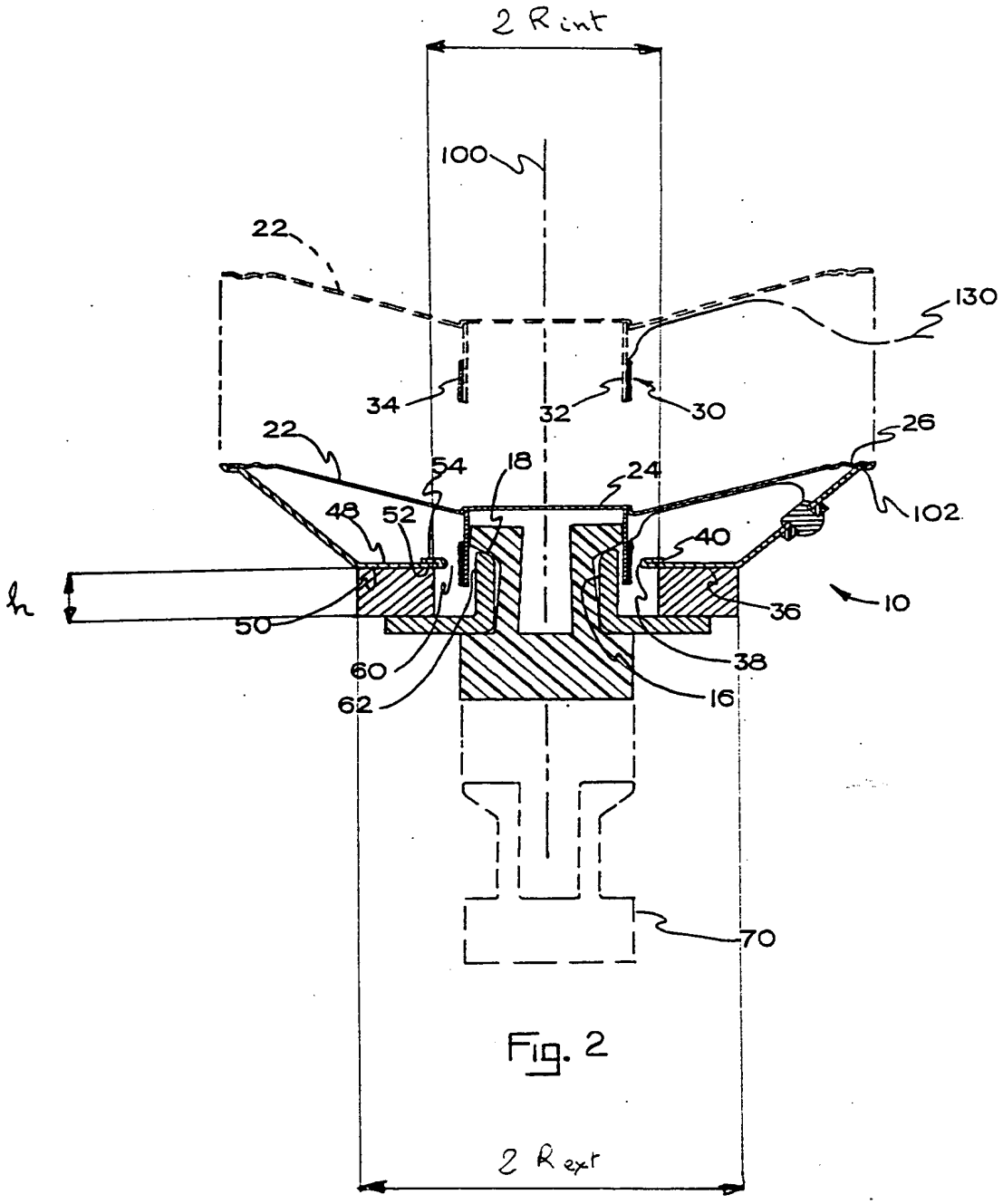

Fig. 2